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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,617	10/03/2006	Cindy Blondine Andre Stuer	NL 040425	1680
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EXAMINER				
RALEIGH, DONALD L				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/599,617

Applicant(s)

STUER ET AL.

Examiner

DONALD L. RALEIGH

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4 and 13-18 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-9, 11 and 12 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The Amendment, filed on August 11, 2008 has been entered and acknowledged by the Examiner.

The addition of claims 10-18 has been entered.

Claims 1-18 are pending in the instant application.

Claim Objections

Claims 10-12 are objected to because of the following informalities: The preamble of each claim refers to "The high pressure sodium of Claim 1". For examination purposes, it is assumed, that applicant meant "The high pressure sodium lamp of Claim 1". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Jackson et al (US PG Pub. No. 2002/0185979).

Regarding Claim 1, Jackson teaches in Figure 9, a high pressure sodium lamp (title) having a nominal power P_{la} , which is suitable to be operated at a very high frequency (VHF), having a discharge tube with a ceramic wall (Paragraph [0033], line 2) and an internal vessel diameter D_{int} , enclosing a discharge space (Para. [0003], line 3)

in which a pair of electrodes (30 and 40) at a mutual electrode distance e_d and a filling of Na-amalgam with a sodium (title) mol fraction (smf), a ratio of the internal discharge vessel diameter D_{int} to the nominal lamp power Pl_a being substantially in a range of $0.045 \leq D_{int}/Pl_a \leq 0.08$.

(Paragraph [0058], Table 1 discloses a value for Pl_a of 150watts and D_{int} of 7mm. The ratio of which would be $7/150 = .0467$, which is within the claimed range).

Regarding Claim 3, Jackson (979) discloses the high pressure lamp characterized in that the lamp has a wall load of at most 30 W/cm^2 . (Paragraph [0058], Table 1).

Regarding Claim 12, Jackson (979) discloses the high pressure sodium lamp wherein the discharge tube has a ratio e_d/D_{int} substantially between about 5.5 and 4.0. characterized in that the discharge tube (20) has a ratio e_d/D_{int} between about 5.5 and 4.0

(Paragraph 0057) lines 5-6 teach that the electrodes extend into the chamber from 1 to 4 mm . The lowest power requirement in Table 1 (Paragraph [0058]) is 150 watts and would require the smallest electrode separation, i.e. (maximum extension of each electrode would be 4mm (8 mm total). Subtracting this distance (8mm) from the inside length of the tube in Table 1 (IL) of 26-32 mm , the separation between electrodes with 150 watts of power can range from 18-24 mm. In Table 1, the inner diameter of the discharge tube (D_{int}) for 150 watts is ID which is 5-7 mm. With this range of values, there exists a ratio of $e_d/D_{int} = 24\text{mm}/5\text{mm}$ which = 4.8 which satisfies the claimed limitation of 4.0 to 5.5.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (979) in view of Niimi (US Patent No. 6,791,267).

Regarding Claim 2, Jackson (979) fails to exemplify the high pressure sodium lamp characterized in that the wall thickness (wt) is $0.4 \leq wt \leq 0.6$ mm.

Niimi teaches a high pressure discharge lamp (abstract, line 1) with a ceramic chamber (Column 9, line 66) and with a wall thickness of the chamber of .55mm (Column 9, line 52) in order to improve the condensing efficiency of the projected light (Column 2, lines 42-46).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the thin wall, as taught by Niimi, into the lamp of Jackson (979), in order to improve the condensing efficiency of the projected light.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (979).

Regarding Claim 5, Jackson (979) discloses the high pressure sodium discharge lamp characterized in that the filling also comprises Xe (Paragraph [0041],

line 2) but fails to disclose the Xenon having a pressure at room temperature in the range of $400 \text{ mbar} \leq p_{\text{Xe}} \leq 1000 \text{ mbar}$.

Jackson (979) discloses the claimed invention except for the pressure of the Xenon.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a pressure of Xenon within the claimed range since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (979) in view of Jackson et al (US PG Pub. No. 2005/0073256).

Regarding Claim 6, Jackson (979) fails to exemplify the high pressure sodium discharge lamp characterized in that the electrodes are provided with emitter and that each of the electrodes has an electrode diameter, which specified relatively to the average lamp current (I_{la}) at nominal lamp power fulfils the relation:

$$0.2 (D_{\text{electrode}})^2 / I_{\text{la}} < 0.45, \text{ preferably } 0.25 < (D_{\text{electrode}})^2 / I_{\text{la}} < 0.35.$$

Jackson (256) teaches a high pressure discharge lamp (abstract, lines 1-2) using sodium (Paragraph [0003], line 2 (NaI)) characterized in that the electrodes are provided with emitter (Paragraph [0002], lines 15-16 (emits light) and that each of the electrodes has an electrode diameter, which specified relatively to the average lamp current (I_{la}) at nominal lamp power fulfils the relation:

$$0.2 < (D_{\text{electrode}})^2 / I_{\text{la}} < 0.45, \text{ preferably } 0.25 < (D_{\text{electrode}})^2 / I_{\text{la}} < 0.35.$$

Jackson (256) teaches in Figure 6 a graph of the relationship between the lamp current and the electrode diameter in order to provide a lamp with superb stability over life (Paragraph [0007], lines 1-4). Looking at the graph with an electrode diameter of 0.6mm and a lamp current of 1.5, the above formula becomes:

$$(D_{\text{electrode}})^2 / Ila = (.6)^2 / 1.5 = .24 \text{ which satisfies above formula } 0.2 < .24 < 0.45.$$

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the electrode and current limitations, as taught by Jackson (256) into the lamp of Jackson (979), in order to provide a lamp with superb stability over life.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (979) in view of Vegter et al (US Patent No. 4,970,431).

Regarding Claim 7, Jackson (979) fails to exemplify the high pressure discharge lamp characterized in that the lamp emits light in nominal operating condition with a color temperature Tc of at most 2500K.

Vegter teaches a high pressure sodium discharge lamp (title) characterized in that the lamp emits light in nominal operating condition with a color temperature Tc of at most 2500K. (Column 4, lines 32-34, (2400K)) to provide a lamp of smaller dimensions of the discharge arc at a given color temperature and a given power and still maintain efficiency (Column 1, lines 55-60).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the color temperature taught by Vegter into the lamp of

Jackson (979) to provide a lamp of smaller dimensions of the discharge arc at a given color temperature and a given power and still maintain efficiency .

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (979) in view of Blau (US PG Pub. NO. 2004/0051472).

Regarding Claim 8, Jackson (979) fails to exemplify the lighting system comprising a full electronic VHF driver for operating a lamp.

Blau teaches in the abstract, line 1, a full electronic VHF driver (electronic ballasts) for operating a lamp (gas discharge lamp). Paragraph [0004], lines 1-2 teaches using the driver with a sodium lamp in order to convert the AC line power to a higher frequency to drive the lamp.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the electronic driver taught by Blau into the lamp of Jackson (979) in order to convert the AC line power to a higher frequency to drive the lamp.

Regarding Claim 9, Jackson (979) fails to exemplify the lighting system wherein the VHF ballast is provided with resonant ignition means by which resonant ignition is applied on igniting the lamp.

Blau teaches wherein the VHF ballast (abstract, line 1, electronic ballast) is provided with resonant ignition means by which resonant ignition is applied on igniting the lamp. (abstract, lines 6-9, resonant frequency for starting the lamp), in order to compensate for the cyclic low voltages of the AC power line (abstract, lines 11-15).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the VHF ballast taught by Blau into the lamp of Jackson (979) in order to compensate for the cyclic low voltages of the AC power line.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (979) in view of Inada (US Patent No. 4,344,018).

Regarding Claim 11, Jackson (979) fails to exemplify the high pressure sodium lamp, wherein the Na- amalgam has a sodium mol fraction (smf) substantially in a range of $0.6 < \text{smf} < 0.75$.

Inada teaches wherein the Na- amalgam has a sodium mol fraction (smf) substantially in a range of $0.6 < \text{smf} < 0.75$. (Column 3, lines 66-68 (60% =.6)) to provide a lamp that operates with Xenon under relatively high pressure that has a much improved luminous efficiency (Column 1, lines 58-61).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the sodium mol fraction, as taught by Inada, in the lamp of Jackson (979) to provide a lamp that operates with Xenon under relatively high pressure that has a much improved luminous efficiency.

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance.

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Although Jackson et al (US PG Pub. No. 2002/0185979) provides ratios of ed/D_{int} and D_{int}/Pl_a in Claim 4, in the claimed ranges, Jackson does not disclose a sodium mol fraction within the claimed range or a ratio of ed/Pl_a within the claimed range and it would not be possible to combine with other references that have different smf ranges and ed/D_{int} ratios with any reasonable expectation of success.

Regarding Claim 4, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in Claim 4, and specifically comprising the limitation of "A high pressure sodium lamp having a nominal power Pl_a , and an internal vessel diameter D_{int} ; a pair of electrodes at a mutual electrode distance ed ; and a filling of Na-amalgam with a sodium mol fraction (smf) substantially in a range of $0.6 < smf < 0.75$, wherein the discharge tube has a ratio ed/D_{int} between about 5.5 and 4.0; a ratio of the mutual electrode distance ed to the nominal power Pl_a being substantially in a range of $0.2 \leq ed/Pl_a \leq 0.35$; and a ratio of the internal discharge vessel diameter D_{int} to the nominal lamp power Pl_a being substantially in a range of $0.045 \leq D_{int}/Pl_a \leq 0.08$."

Regarding Claim 10, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in Claim 10, and specifically comprising the limitation of "The high pressure sodium lamp wherein a ratio of the

mutual electrode distance ed to the nominal lamp power Pla is substantially in a range of $0.2 \leq ed/Pla \leq 0.35$.

Regarding Claim 13, it is allowable for the reasons given in Claim 4 because of its dependency status on Claim 4.

Regarding Claim 14, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in Claim 14, and specifically comprising the limitation of "A high pressure sodium lamp having a nominal power Pla , and an internal vessel diameter D_{int} , a pair of electrodes at a mutual electrode distance ed ; a ratio of the mutual electrode distance ed to the nominal lamp power Pla being substantially in a range of $0.2 \leq ed/Pla \leq 0.35$."

Regarding Claims 15-18, they are allowable for the reasons given in Claim 14 because of their dependency status on Claim 14.

Response to Arguments

Applicant's arguments with respect to claims 1, 4 and 14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment of the independent claims has necessitated a new search and new prior art references, therefore:

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DONALD L. RALEIGH whose telephone number is (571)270-3407. The examiner can normally be reached on Monday-Friday 7:30AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter J Macchiarolo/
Primary Examiner, Art Unit 2879

/Donald L Raleigh/
Examiner, Art Unit 2879